

Comparison between the Conventional Methods and PSO Based MPPT Algorithm for Photovoltaic Systems

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Abstract : Since the output characteristics of Photovoltaic (PV) system depends on the ambient temperature, solar radiation and load impedance, its maximum Power Point (MPP) is not constant. Under each condition PV module has a point at which it can produce its MPP. Therefore, a Maximum Power Point Tracking (MPPT) method is needed to uphold the PV panel operating at its MPP. This paper presents comparative study between the conventional MPPT methods used in (PV) system: Perturb and Observe (P&O), Incremental Conductance (IncCond), and Particle Swarm Optimization (PSO) algorithm for (MPPT) of (PV) system. To evaluate the study, the proposed PSO MPPT is implemented on a DC-DC converter and has been compared with P&O and INcond methods in terms of their tracking speed, accuracy and performance by using the Matlab tool Simulink. The simulation result shows that the proposed algorithm is simple, and is superior to the P&O and IncCond methods.

Keywords : photovoltaic systems, maximum power point tracking, perturb and observe method, incremental conductance, methods and practical swarm optimization algorithm

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